

NATIONAL PORK BOARD
Request for Proposals
Spring Call 2017



DEADLINE: Tuesday, May 23rd– 5:00 pm CST

The National Pork Board is soliciting research proposals dealing with these categories:

ANIMAL SCIENCE – Sow Lifetime Productivity

SUSTAINABILITY – Air

SUSTAINABILITY – Environmental Footprint

SUSTAINABILITY – Water Use/conservation

SWINE HEALTH – PRRS

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ANIMAL SCIENCE

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SWINE HEALTH – PRRS

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NOTES:

Proposal selection will occur in July 2017.

Notification of grant awards will be done by September 2017.

Project funding will begin October 1, 2017.

Requests for second-year funding must be resubmitted.

ANIMAL SCIENCE

The Animal Science Committee of the National Pork Board is soliciting proposals in the area of **Sow Lifetime Productivity**. Proposals must be submitted in the required format to be considered. Projects may cover multiple-years for completion of an entire project. However, proposals for multi-year projects are expected to detail project deliverables and budgets on a year-to-year basis. If proposed projects are for completion of multi-year efforts already in-progress, the proposal must include a narrative of progress and accomplishments to date of the overall research effort. This may be accomplished by including copies of interim or final reports from previously funded research efforts as appendices to the submitted proposal. Proposals will be reviewed by panels of experts for scientific soundness and by pork producers for industry application. Proposals may be returned to the investigator with suggested/requested revisions prior to final funding decisions. Funding for accepted projects will follow final approval by the National Pork Board. *Further enquiries regarding this solicitation can be directed to Chris Hostetler by email chostetler@pork.org or by phone: 515/223-2606.*

Proposals are solicited in these areas only. Proposals submitted that do not adhere to these areas will not be considered further.

ANIMAL SCIENCE – Sow Lifetime Productivity

Sow lifetime productivity is defined as the total number of quality pigs a sow weans from the time she becomes breeding eligible until she leaves the herd. This measure of productivity is more encompassing than others because it encompasses both the number of pigs she weans as well as how long she remains in the herd. The Animal Science Committee of the National Pork Board is seeking research proposals that will **decrease piglet mortality** and thereby increase the number of pigs weaned per litter and ultimately Sow Lifetime Productivity. The following areas have been identified as research priorities relative to piglet mortality.

- 1) Sow and piglet nutrition including nutrient transfer across the mammary gland, milk volume and quality, colostrum consumption, colostrum quality, supplemental feeding systems
- 2) Facility and equipment design that enhances the microenvironment for the piglet
- 3) Neonatal piglet management and care such as split suckling, cross fostering and obstetrics.

The Animal Science Committee has dedicated \$100,000 to this effort in 2017 however; there is no limit set for the amount of funding requested for individual proposals. Submitted proposals must bring fundamental knowledge and application to improve Sow Lifetime Productivity by focusing on this area. Because this is a multifactorial issue, successful investigation in this area will likely require a variety of disciplines including but not limited to sow nutrition, nutritional intervention for piglets, piglet health, equipment design, manipulation of microenvironment, intensive piglet management; proposals should reference these key concepts. Proposals utilizing a multidisciplinary approach are highly encouraged. Preference will be given for research trials conducted under commercial-like conditions and with sufficient replication to make statistically appropriate conclusions. The committee strongly encourages collaboration with industry partners. Submitted proposals must show evidence of sufficient statistical power in relation to primary project objectives and clearly define the role of the study in meeting the objective to deliver cost effective technology.

SUSTAINABILITY

The Sustainability Committee solicits proposals in the following areas. The Committee anticipates having \$170,000 to fund environmental sustainability research. There is no exact funding limit for submitted proposals but the budget request should be appropriate and justified for the work that is being proposed. Researchers are encouraged to find matching funds or in-kind contributions to the project. Newly submitted multi-year proposals should provide a clear overall vision and objectives for the entire project with a detailed plan of work and budget outline for each of the proposed years. If proposed projects are seeking second-year funding of a previously funded project, the proposal must include a discussion of progress and accomplishments realized from the research efforts to date toward success of the overall research effort. This may be accomplished by including copies of interim or final reports from previously funded research efforts as appendices to the proposal submitted.

Proposals must be submitted in the required format to be considered. All eligible proposals will be reviewed by a panel of peers for scientific soundness and validity. Final funding decisions will be made by the National Pork Board. Further inquiries regarding this solicitation can be directed to Allan Stokes by email astokes@pork.org or by phone: 515/223-3447. Proposals may be returned to the investigator with suggested/requested revisions prior to making a final funding decision.

SUSTAINABILITY – Water Use/Conservation

1. A meta-analysis comparison of the relative strengths and risks to water quality between utilization of nutrient sources from swine manure and commercial fertilizers applied to agricultural crops in the United States. At a minimum this analysis will address differences in application methods employed and estimates of the amount of each nutrient source applied by each application method as well as for each nutrient source and each application method the relative short and long-term impacts on soil health, potential for nutrient mobility through surface runoff and sub-surface leaching, water solubility.

SUSTAINABILITY – Environmental Footprint

2. A comparison of the carbon, water and land footprint differences between a standard corn and soybean finishing swine diet formulation and four alternative diets of equivalent animal nutritional value formulated based on “least cost formulation” principles. This analysis will be based on full life cycle analysis using available open source data and following recognized and accepted life cycle assessment guidance and methods. The carbon, water and land footprints will be assessed on a per pound live weight and per pig at the farm gate basis. The comparison will also include relative cost differences between the diet formulations based on a cost per pig produced basis.

SUSTAINABILITY - Air

*The Sustainability Committee of the National Pork Board **on behalf of Indiana Pork** solicits proposals in the following area. Indiana Pork anticipates having \$30,000 to fund research in this specific area. Additional funding from the National Pork Board may be added to funds available from Indiana Pork. Budgets contained in submitted proposals should be appropriate and justified for the work proposed. It is expected the project proposed will be accomplished within a one year time frame from the time of project approval, however, if a proposal is for a multi-year research effort the proposal should provide a clear overall vision and objectives for the entire project with a detailed plan of work and budget outline for each of the proposed years. If a proposed project is seeking additional funding for a previously funded research effort, the proposal must include a discussion of progress and accomplishments realized from the research efforts to date toward success of the*

overall research effort. This may be accomplished by including copies of interim or final reports from previously funded research efforts as appendices to the proposal submitted.

Proposals must be submitted in the required format to be considered. All eligible proposals will be reviewed by a panel of peers for scientific soundness and validity. Final funding decisions will be made by Indiana Pork. Inquiries regarding this solicitation can be directed to Allan Stokes by email astokes@pork.org or by phone: 515/223-3447. Proposals may be returned to the principle investigator with suggested/requested revisions prior to making a final funding decision.

1. An evaluation of current products available in the open marketplace for use in deep pit swine manure storage structures as to their effectiveness in mitigation of odors and reduction of hydrogen sulfide, ammonia and volatile organic compound gas emissions from stored swine manure. Products evaluated will include those in most common use in commercial swine production in the U.S. and State of Indiana. The evaluation at a minimum should, quantify differences in emissions of odors and gasses from manure treated with an individual product against same source manure untreated by any product. The evaluation will also determine the length of time a product is effective in mitigating odor and emissions and the frequency of product additions necessary to maintain mitigation effects. The evaluation will quantify the economic costs associated with use of the product on a per pig basis.

SWINE HEALTH

SWINE HEALTH – PRRS

The National Pork Board developed a Strategic Plan that outlines key goals for 2015-2020. Those goals include Build Consumer Trust; Drive sustainable Production; and Grow Consumer Demand. The goal, “Drive Sustainable Production”, is of high priority to and can be directly impacted by the Swine Health Committee. Therefore, as part of the efforts to address this goal, one key target forms the basis for the PRRS call for proposals.

1. *By 2020, the National pork Board will deploy tools and programs to decrease the annual economic impact of PRRS by 20 percent, as adjusted for inflation and measured against the 2012 PRRS economic impact baseline study.*

Achieving this goal will require increasing the safety and efficacy of currently available technologies and control strategies. Emphasis is placed on research that is quickly applicable to meeting this target. Reducing PRRS beyond 2020 will require improvements in overall herd health using novel and revised concepts for vaccines, diagnostics, and husbandry. Long-term emphasis is placed on research that provides broad impact to the overall health of US swine.

The National Pork Board Swine Health Committee is requesting proposals on issues that directly address the priorities listed in the RFP. All proposals submitted **must** address at least one of the specific research subtopics of interest described below. **Proposals that do not directly address the listed priorities will NOT be considered for funding.**

In addition, all applicants are highly encouraged to view the PRRS Research Book at <http://www.pork.org/wp-content/uploads/2009/11/prrsre.pdf> to view previously funded projects to avoid overlap and duplication.

Funding opportunities for proposals are outlined as follows:

- a.) Short-term (12 month) proposals
- b.) Long-term (12-24 months)

Newly submitted multi-year proposals should provide a clear overall vision and objectives for the entire project with a detailed plan of work and budget outline for each of the proposed years.

For projects seeking **second-year funding of a previously funded project**, the proposal must include a discussion of progress and accomplishments realized from the research efforts to date toward success of the overall research effort. This may be accomplished by including copies of interim or final reports from previously funded research efforts as appendices to the proposal submitted.

Proposals **must** be submitted in the required format provided with the RFP in order to be considered. **Proposals that do not directly address the listed priorities will NOT be considered for funding.** All eligible proposals will be reviewed by a panel of peers for scientific soundness and validity. Final funding decisions will be made by the National Pork Board Swine Health Committee. Further enquiries regarding this solicitation can be directed to Lisa Becton by email lbecton@pork.org or by phone: 515-223-2791.

1. PRRS immunology/vaccinology:

Significant impediments to achieving the PRRS reduction goal are the frequent re-breaks of clinical disease in “PRRS Stable Farms,” and the constant need for safer and more efficacious vaccines. Accurately defining the true PRRS status of a site will have greater importance as the incidence of PRRSV decreases with success of the 2020 program. Reduction in disease incidence will be dependent in part on highly sensitive diagnostic assays/methods.

Therefore, specific areas of interest are listed below:

- Demonstrate efficacy of novel vaccine concepts, which will include comparison to an existing USDA-licensed PRRSV vaccine.
- Evaluate combination(s) of immunomodulators with existing vaccines to discover increased protection and safety (reduction in vaccine virus being shed) that will benefit future control and possible elimination programs.
- Identify the viral properties and components of the immune system that define homologous protection, or conversely, identify the components of "heterologous" viruses that allow them to escape prior immunity.
- Quantitate the effect of lactogenic immunity on the duration of viremia, persistence, and shedding following vaccination or exposure to wild-type virus.
- What are the different exposure or vaccination strategies needed to effectively stimulate herd immunity and shorten the time-to-stability?

2. PRRS epidemiology:

The clinical picture and management of PRRS breeding herd outbreaks due to contemporary isolates, such as those characterized as 1-7-4, are different from historical PRRS outbreaks. Developing an understanding of the epidemiology of these contemporary viruses is critical to be able to minimize the average time-to-stability of herds following outbreaks. Current herd closure and management recommendations affecting average herd time-to-stability needs to be evaluated through a coordinated investigation of the relationships between the characteristics of the contemporary viruses, the host response and environmental factors.

Specific questions of interest include:

- Do contemporary (2015-2016 isolates of PRRS) viruses have different viral characteristics that make them harder to control/manage and reach time-to-stability compared to historical strains?
 - ✓ Investigation of viral characteristics should consider whole genome sequencing to address the variability of clinical picture.
- Describe viral diversity and persistence over time within pigs/pens/barns/sites using whole genome sequencing. Compare the genetic characteristics of viruses that persist vs those that do not.
- What are the specific biosecurity steps within a farm that can effectively impact transmission within a herd to shorten time-to-stability?

3. PRRS Surveillance and Diagnostics:

The development of effective testing and surveillance strategies supports the goal of reducing the impact of PRRS by 20% as well as support the future programs for the elimination of the virus. New tools and strategies are needed in order to effectively reach this goal.

Targeted priorities to address surveillance include:

- Improve the efficiency and accuracy of testing. Proposals can address one or more of the following: on-farm sampling methods, sample handling/processing, determination of persistent status, specific test

improvements and/or development of new diagnostic test technologies that result in improved diagnostic sensitivity and/or diagnostic specificity.

- Design surveillance protocols that integrate spatiotemporal (geographical area over time) or other approaches that improve the efficiency or lower the cost of disease surveillance.
- Develop sampling/testing strategies for the detection of low prevalence infection (< 5%) in piglets/sows at farrowing, at weaning, in growing populations, and in sow herds (i.e. for use in testing for PRRS elimination strategies or surveillance of presumed-negative herds).
- Develop cost-effective diagnostic tests able to differentiate PRRSV vaccinated animals from non-vaccinated animals.
- Develop and implement improved surveillance techniques in order to determine the proportion of elimination failures due to re-introduction vs viral circulation at "undetectable" levels.